THE INTERACTION BETWEEN SOCIAL DISADVANTAGE AND ENVIRONMENTAL HEALTH: SES, LEAD, AND BLOOD PRESSURE

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Background and Aims: Some studies suggest that social disadvantage may potentiate the effects of environmental exposures. In this study, we test the hypothesis that socioeconomic status (SES) and race may moderate the relationship between blood lead and increased blood pressure (BP).
Methods: Data come from the National Health and Nutrition Examination Survey (2001-2008). OLS regression is used to test three-way interactions between race, SES (education and poverty), and lead, adjusting for age and hypertension risk factors.
Results: Blood lead was related to higher blood pressure, but only for Blacks. Among Blacks, the association was stronger for lower SES than higher SES groups. For example, Black men without a high school (HS) education show a 5.6mmHg increase in SBP (se=1.3, $p<0.001$) for each doubling of BL while Black men with a HS education show a 1.8mmHg increase (se=0.8, $p<0.05$). Similar effects are seen for Black women. No associations between blood lead and blood pressure were found for White men and women regardless of SES.
Conclusions:
The relationship between blood lead and high blood pressure appears to vary by race and SES. These findings are consistent with theories suggesting that social disadvantage may moderate the association between some environmental exposures and health.